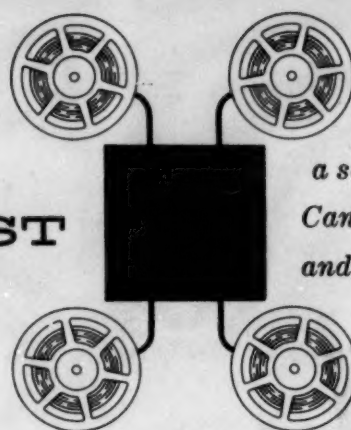


DATA PROCESSING DIGEST

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Programing

AUTOMATIC PREPARATION OF FLOW CHART LISTINGS

A. E. Scott, IBM Corporation, Poughkeepsie, New York
JOURNAL OF THE ACM, January 1958; pages 57-66.

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OF MICHIGAN

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The time-consuming drudgery of manually preparing logical flow diagrams for use as maintenance aids, for the reference files, and for use in program debugging is eliminated with an ingenious use of the computer, described in this article. The program, prepared for the IBM 705, uses, as input data, the list of commands that the machine is to execute. "This list is normally an output of another routine which translates the programmer's language into machine code. The flow chart listing program produces, as an output, a tape to be run as an auxiliary tape-to-printer operation."

An illustration shows an example of a printed record of the assembled routine. "Logical blocks of coding are isolated and surrounded by a frame. The blocks are fitted on the page so that they do not start on one page and end on another, provided, of course, that the block length is shorter than a page. All transfer instructions are identified. If the location and address of a transfer instruction are on the same page, an arrow is drawn between the transfer instruction and the position to which it transfers. If the location and address are on different pages, an alphabetic label is attached. The location of the transfer instruction shows the label and page to which it goes. The location to which control jumps shows the label and the page(s) from which it came. Program switches, that is, programming devices to alter control flow, are treated as conditional transfers.

"The amount of coding contained in each block is left to the discretion of the programmer and is the only additional information that must be supplied."

"Control entering each block is shown by an arrow into the top or by a row of periods into the sides, or both. If control enters from another page, the alphabetic label and page from which control came are listed.... The presentation shows precisely where control comes from without the tedious clerical operation of examining and marking every jump instruction within the program."

*Tedious hand-charting
is eliminated*

"Control leaves the blocks either by an arrow out of the bottom, or by an arrow or row of hyphens out of the sides. If control goes to another page, the alphabetic label and the page to which control jumps are listed." All arrows down the page are printed on the right of the coding and all arrows up the page are printed on the left.

"Whenever a conditional transfer or program switch terminates a block of coding, the two possible directions of control flow are shown. If the conditions are satisfied, the direction of control flow is indicated by a lead out of the sides of the block; if they are not satisfied, by a lead out of the bottom of the block."

The program routine is in two parts. Part I "records the location and address of those instructions that have a transfer as an operation part or those in which it is indicated that the operation may become a transfer....Part I also determines how much is to go on each page. Part II frames the blocks, and overprints arrows, arrow-heads and identifications."

A detailed description is given of the manner in which the program produces the diagram, and an example is shown. An extension of the technique allows machine production of diagrams in two dimensions. The technique is "a natural" for use in mechanizing the production of system logical block diagrams.

CHAINING—A USEFUL METHOD IN RAMAC FILE ORGANIZATION

DATA PROCESSOR, March 1958.

((One problem encountered when using a random access memory for file storage is that of relating an identification number (a part number or stock number) with a memory address, so that the machine will know where to go to find the desired record. One method is to use an index, like an index in a book, but this is generally uneconomical. Another common method is to "compute" the memory address from the identification number. Trouble arises when two different identification numbers result in the same memory address—one of them must be diverted to an "overflow address."))

*Duplicate addresses
are referenced*

Chaining is a method for organizing a RAMAC file and keeping track of overflow addresses. The memory is loaded in two steps. Initially, the first identification number calling for a specific memory address will be stored at that address. Subsequent records calling for the same address are set aside until the complete loading process has gone through the first step. In the second step, the previously set-aside items are loaded into the unused areas. In addition, each record is made to contain the address of the next overflow record. In the example shown, an average of 1.5 accesses per item is required, to obtain a record from file.

Additional savings in access time can be achieved by first determining which records are referred to most often, and then loading the file in the order of decreasing frequency of reference. In the example shown, the average number of accesses per item is reduced to 1.31.

Applications

705 INDEXES DEAD SEA SCROLLS

COMPUTING NEWS, April 15, 1958; pages 3-8.

An IBM 705 is being used to index the words contained in the Dead Sea Scrolls. An index is a standard device used to break down a written work alphabetically into words, so that any given one may be studied in all of its contexts. Scholars can translate accurately only by having the exact context for every instance a word appears. The scholar's task in studying the Dead Sea Scrolls is unusually difficult because of their deterioration. Thousands of small fragments must be identified and fitted into the proper Scroll. The machine-made index will be of enormous assistance in this task, enabling the scholar to see at a glance every possible use of each fragment.

*Computers can supply
missing words*

By transposing prose into a series of mathematical relationships, the IBM 705 is capable of making a qualified guess as to what words were originally written in the hundreds of mutilated sections. The computer analyzes the words preceding and following each gap. Thousands of words are then electronically scanned until the computer finds one that most nearly fits into the context. Experiments proved that the computer could replace correctly as many as five consecutive words, and reveal a mathematical picture of different styles of writing, detecting additions by another hand foreign to the original author.

The article includes an interesting series of illustrations which traces one Hebrew character from the original scroll through its modern translation, its position on a punch card, and its place on the machine-produced alphabetic word list.

ROUTINE REPORT WRITING BY COMPUTER

W. H. Waldo, R. S. Gordon, J. D. Porter, Monsanto Chemical Co., St. Louis
AMERICAN DOCUMENTATION, January 1958; pages 28-31.

To find a chemical to do a specific job, chemists must go through many research reports. Any tests they make, using the chemical must be reported, also, for future reference. By keeping

laboratory notes in a prescribed way, reports may be compiled automatically and stored for easy retrieval and automatic review. An IBM 702 is used in this application. Lab reports are coded on forms which correspond to 80-column punch cards. The information is then keypunched and maintained on magnetic tape in four files: 1. Compound's structure and number, 2. Compound's name and number, 3. Compound's molecular formula and number, and 4. Compound's test results and number.

Thus, the original report is automatically produced and stored from the standardized lab reports, information may be selected and retrieved automatically, and pertinent information may be automatically typed out in English and intelligent numbers. Progress reports may be issued easily and quickly, and special reports may be compiled by the computer as needed, saving the researcher many man-hours in searching records.

SONIA—A SYSTEM OF POSTING BANK CHECKING ACCOUNTS

J. N. Raleigh, U.S. National Bank, Portland, Oregon
COMPUTING NEWS, March 15, 1958; page 3.

After a year of trial and refinement of its system of account posting by the IBM 650 table look-up method ((see: DPD, May 1957; and November 1957, page 9)), the U.S. National Bank of Portland has begun its fourth variation of the original program. Although the article does not clearly state the method, it appears that the transaction cards information is stored in the 650 in account number order, and the balance cards are used to scan the transactions. This method eliminates the table look-up of the original program reducing the total processing time. By posting two different branches simultaneously, the program is speeded up by about 30%.

COMPUTER IS A STEP TOWARD AUTOMATION

CHAIN STORE AGE (ADMIN. ED.), April 1958; pages 22, 23.

The Safeway grocery chain is using its computer installation to keep a record of the 300,000 to 500,000 pieces of equipment installed in stores, warehouses, and plants; maintain a unit and dollar sales analysis of private brands as compared with other brands stocked; compile a four-week profit and loss statement for each division, along with comparison figures for the period a year ago. Additional applications planned for 1958 include analysis of meat and produce sales by pounds, and recording of dollar sales and gross profits of 100 different grocery commodity groups. ((The computer was not identified in the article, other than being described as "medium-sized." However, from the illustration, we assume it to be an Alwac.))

SETTING UP A COMPUTER CENTER

*Edgar C. Richardson, Michael Baker, Jr., Inc.
CONSULTING ENGINEER, April 1958; pages 102-106.*

More than half the states are now using computers in highway design computation, with about 40 computers being used by state highway departments and consulting firms. The Michael J. Baker, Jr., Inc. consulting firm has installed an IBM 650 for a potential of 81 applications, of which nine are now in operation. In making feasibility studies, the firm discovered that break-even could be reached if "50 percent of all earthwork computations, 5 percent of the total bridge design activity, and 33 percent of all traverse computations were allocated to a computer." This would use only 20 percent of the potential capacity. The firm also found that electronic computation would provide "a more thorough analysis and evaluation of location and design solutions, resulting in better design, savings in construction costs and, therefore, the best possible service to the client."

Their approach to programing was "that machine methods should follow as closely as possible existing manual methods with regard to submitted data and end results until such time as our design sections became familiar with computer produced calculations."

MEDIUM-SIZE EDP

*J. Stanley Hill, Minnesota Mutual Life Insurance Co.
BEST'S LIFE NEWS, December 1957, pages 51-54.*

This company is using the DataFile tape bin feature of the Datatron computer to facilitate preparation of notices. The DataFile contains the status records of the policyholders. The regular computer program is interspersed with instructions which determine whether the tabulator buffer is ready to receive another line of printing. This keeps the tabulator busy without delaying the computing process. The master record is a 600-digit record on magnetic tape--separate from the 50 digit status record kept in the DataFile.

DIGITAL COMPUTER USE IN METROPOLITAN TRAFFIC STUDY

*Dr. A. W. Jacobson, Computation Laboratory, Wayne State University, Detroit, Michigan
COMPUTING NEWS, April 1, 1958; pages 3, 4.*

A continuing program of traffic study is being made cooperatively by the City of Detroit and Wayne State University's Computation Laboratory, providing the city with valuable traffic research, and the university with statistical problems for its students. This article describes some of the work being done.

General Information

SOME ASPECTS OF AUTOMATIC DATA PROCESSING IN THE UNITED STATES—

I. RECENT DEVELOPMENTS IN EQUIPMENT

J. H. H. Merriman and F. J. M. Laver
O & M BULLETIN, February 1958; pages 6-12.

*U.S. equipment
has reached a plateau*

This English journal reports on a survey made by the authors in October 1957 of significant trends in new design in the United States. They surveyed developments in central processing units, input devices, data transmission, magnetic tape, and output devices.

Some of their comments follow:

Central processing units: "In only one of the laboratories visited was there evidence of work on storage devices using thin films, and this work used the film as part of a conventional magnetic circuit rather than in the high frequency spin-echo mode (the so-called nuclear 'echo' storage)."

Input devices: "Only one firm appears to be developing an input device for hand keying directly on to magnetic tape, and this development has not proceeded very rapidly, for it is still 'about to be delivered.'"

Data transmission: "There is general agreement that for the transmission of data signals over lines a single longitudinal parity check is inadequate owing to the occurrence of systematic machine faults. Equally, a single transverse parity check is inadequate owing to the frequency of multiple errors caused by noise affecting consecutive signal elements."

Magnetic tape: "It seems possible... that techniques are about to become available which will enable magnetic tape to be used having a packing density at least 10 times greater than those currently available."

Conclusions: "As indicated earlier in this article no evidence was seen of any major change in principle or techniques likely to alter fundamentally the design of data-processing machines in the next few years. Projected machines are mere extrapolations of known techniques, and it may be that a major break-through in the development of new machines must wait further study of the essential processes of human thought and perception... If these conclusions are justified, it means that machines are likely to become obsolete during the next few years only in terms of degree, that is to say machines of higher performance will be developed, but not machines of an entirely different and superior kind which would change the fundamental premises of planning automatic data processing systems."

ACCOUNT NUMBERING—DEVELOPING THE PROVING DIGIT

Robert Duphorne, First National Bank, Albuquerque, New Mexico
AUDITGRAM, April 1958; pages 4-11.

Account numbering is essential for the use of computers in banking, but opinions differ as to which type is most usable--numeric or alpha numeric. A disadvantage of the straight numeric type of numbering is that eventually the system will have no correspondence with the alphabetic listing of accounts, making a cross index necessary to locate lost numbers.

An alpha-numeric system retains an absolute alphabetical sort. Gaps must be left between account numbers to provide for future accounts. This requires a careful study of growth in the recent past as well as a forecast of future growth. Another important consideration is the mortality rate and the method for filling in dead numbers with new accounts.

It appears that a six-digit number is the smallest possible number to be used for account numbering, with the addition of a seventh proving digit. A method for computing a proving digit from the six-digit account number is given in detail, and is based on the IBM self-checking number system.

PROCEEDINGS OF THE FOURTH ANNUAL COMPUTER APPLICATIONS SYMPOSIUM

Armour Research Foundation, Illinois Institute of Technology, 1957. \$3.00

Fourteen papers and a panel discussion are included in the proceedings of the Armour Research Foundation Computer Applications Symposium. These are divided into two sections--business applications and engineering applications. The business applications include the Michigan Hospital Service Datamatic system, Eastern Airlines Reservation System, 3-M's inventory control problem on IBM 705, a description of the problems involved in preparing for the 1960 census using a Univac 1103, Sears, Roebuck warehousing problem, and a paper on new developments in automatic programming by Dr. Grace Murray Hopper of Remington Rand. An interesting luncheon talk is included which describes some special equipment being used by Chicago in the study of traffic flow. In general these papers give factual information in an interesting, easy-to-read style. They appear to have been carefully edited, a point much in their favor, and in contrast to most proceedings. Copies of the proceedings may be ordered from Armour Research Foundation, Illinois Institute of Technology, 10 West 35th Street, Chicago 16.

FINANCIAL REPORTING IMPLICATIONS OF ACCOUNTING AND ELECTRONIC DATA PROCESSING

W. Stewart Hotchkiss, Ramo-Wooldridge Corp., Los Angeles
THE CONTROLLER, April, 1958; pages 155-158, 182-184.

"Companies with no large volume operations can make use of electronic equipment." This would be dependent upon the company's complete integration of data processing, with management establishing policy for uniform reporting and directly managing the data processing activity. All general ledger, operating and capital expense budgets and sales forecasts would be incorporated into the electronic system. All financial and operating reports, not only for top management, but for every cost center would be produced automatically, within three or four working days after the close of the period.

*Reports should be by-product
of data processing*

Specific applications to payrolls, inventories, etc., which have been popular "have not been tied together in such a way that monthly and year-to-date figures for sales, cost of sales, manufacturing costs, inventory positions, overhead and administration costs, and profits can be produced automatically as a by-product of the data processing carried on in a routine daily activity." Proper programming could produce the desired reports quickly and accurately.

A second contribution of a well integrated system would be made in the areas of forecasting and budgeting. "With operating budgets and forecasts on the computer, management has a completely new tool which has not heretofore been available largely because of time and cost factors. . . . With the use of a data processor it is practical and desirable to develop a series of budgets and forecasts in which a range of alternate assumptions are employed. . . . Furthermore. . . management can have alternate operating plans developed and ready to implement if circumstances dictate the need."

Other applications in the management area are making calculations for decisions on acquisitions and mergers (such as stock exchange bases); development of financial data required for labor negotiations; measuring profitability of product lines; maximizing return on investment; measuring market participation; anticipating fluctuations in business activity levels; optimizing use of facilities; projecting cash flows; budgeting capital expenditures; and measuring the effectiveness of the planning function itself.

LEARNING FROM AMERICAN MISTAKES

John Diebold, John Diebold Associates
AUTOMATION PROGRESS, March 1958; pages 90, 91.

Readers in England may be interested in the author's views of American business use of computers as opposed to British and European. He states that the latter are "used to squeezing much more yield from their equipment than Americans," and for this reason will make more scientific use of the management concept of computer use.

ELECTRONICS IN ACTION

Special Report No. 22, American Management Association

A group of papers presented at the AMA Third Annual Electronics Conference in February 1957, is contained in this report. The report is divided into three sections--Feasibility Studies, Electronics at Work, and New Frontiers. As may be expected, the first two sections are, by now, somewhat dated. That is, the papers do not offer particularly new concepts of computer applications or installations. However, the third section offers several interesting studies in operations research and systems engineering techniques, which will be of value to those managements now planning to use EDP for decision-making purposes.

For instance, one paper, "Electronic Computer Simulation of Inventory Control," discusses Thompson Products' simulation program. Thompson has 35 branch warehouses, with a total of 525,000 part numbers. A computer is being used to search for an optimum operating point, whereby inventories as well as lost sales due to out-of-stock conditions are reduced. Their investigation is not yet complete. Early results show that two hours of computer time provides them with data equivalent to nearly 200 years of experience.

Price: for members of AMA: \$2.50; non-members: \$3.75.

INTERNATIONAL TECHNICAL TITLES

Published by Technical Library Associates

A new service to research and engineering people has published its fourth issue under a new title (formerly called Technical Contents). The monthly service lists the contents of more than 125 technical and scientific journals. The purpose is "to save time in getting the announcement of contents of journals to the research man and to save library staff time." Journals can be kept in the library for ready reference. Individuals may check the contents of the title index for needed titles so that journals need not be routed. Single copy subscriptions are \$8.00 per year. Multiple copy rates vary. Technical Library Associates, 11261 Venice Boulevard, Los Angeles 34, California.

SPECIAL REPORT TO MANAGEMENT

BANKING, April 1958; pages 43-55 and subsequent.

A series of articles on methods, equipment, and possibilities for automation in banking includes: How Automation Affects Structural Design, Electronics for Smaller Banks, Bookkeeping with Fully Automatic Systems, Semi-Automatic Check Handling, and Introducing Your Customers to Electronic Banking.

In the article "Semi-Automatic Check-Handling," the system of cyclic statement issue used at the First National Bank of Akron is described. Checks are not filed daily, but are held in the check files by data and by ledger. Statements are issued on a schedule of cut-off dates determined a year in advance. Although it takes longer, under this system, to look up a customer's canceled check, "this minor disadvantage is more than offset by the considerable savings in time we have effected in our statement rendering procedure."

GIANT BRAIN MAKES DETROIT DEBUT

OFFICE EXECUTIVE, April 1958; page 22.

NEW DATAMATIC PROCESSOR MAKES DEBUT AT MICHIGAN HOSPITAL SERVICE

OFFICE MANAGEMENT, April 1958; pages 39, 58.

The first Datamatic computer system has been installed at the Michigan Hospital Service for processing an average of 25,000 daily transactions for 3,500,000 Blue Cross-Blue Shield members. All permanent records for the members are stored on 20 reels of magnetic tape.

SYSTEMATION

A new semi-monthly systems newsletter has begun publication. It is four pages, punched for standard three-ring binder, with drawings, charts, and cartoons to liven and illustrate the text. Content is systems trends and techniques. Writer is Les Matthies, well-known in the Systems field. The first issue is packed with interesting information--for example, an article on "Bootleg Forms." Price is \$20 a year (24 issues). Publisher: Ross-Martin Co., Box 800, Tulsa, Oklahoma.

CUTTING COSTS AND IMPROVING YOUR BUSINESS THROUGH OFFICE MECHANIZATION AND AUTOMATION

Prentice-Hall Special Report

A small pamphlet published by Prentice-Hall, Inc., publishers of business books and publications, points out the necessity for examination of office practices in relation to the over-all efficiency of the business. "Cutting paperwork costs... is not the only one--nor is it the main or proper reason for instituting important office system changes. There may well be substantial grounds for spending more money on office work to help produce cost savings or more profits in other parts of your business." Systems engineering implemented by business-wide integrated data processing is suggested as the basis of modern office planning.

Management Decision-making Techniques

DECISION RULES FOR ALLOCATING INVENTORY TO LOTS AND COST FUNCTIONS FOR MAKING AGGREGATE INVENTORY DECISIONS

Charles C. Holt, Carnegie Institute of Technology

JOURNAL OF INDUSTRIAL ENGINEERING, January-February, 1958; pages 14-22.

An Analysis is presented which is designed to facilitate decision-making on two levels. "The analysis answers the following questions: If a decision has been made higher in the organization setting the aggregate amount of inventory available for lots (or batches), how should this inventory be allocated to lot sizes of individual products? What aggregate costs of set ups and aggregate costs of holding inventory should be taken into account by the higher level of the organization in setting the aggregate inventory that is to be available for lots without going into the detail decisions? To answer the first question decision rules are obtained for determining the optimal (purchase or production) lot sizes for individual products when a constraint has been placed on the total inventory that is permitted. To answer the second question, an expression is obtained for the total of the costs that depend on lot sizes, but this expression is given directly as a function of aggregate inventory. While this paper is written in the context of lot size and inventory decisions, the techniques developed should be of broad use in dealing quantitatively with complex multilevel decisions."

Mechanical Translation

THE TRANSLATING MACHINE: AN ABC FOR YOU

PRODUCT ENGINEERING, March 24, 1958; pages 30-33.

Three aspects of mechanical translation are discussed: the lexical, the syntactic, and the semantic. Lexical refers to word-for-word translation. "Armed with a Russian-English dictionary, a person entirely ignorant of the Russian language could come up with a literal translation of a Russian document. It would not, however, be of much use. It would be something like this:

"' (In, At, Into, To, For, On, N) (last, latter, new, latest, lowest, worst) (time, tense) for analysis (and, N) synthesis relay-contact electrical (circuit, diagram, scheme) parallel--(series, successive, consecutive, consistent) (connection, junction, combination)

(with, from) (success, luck) (to be utilize, to be take advantage of) apparatus Boolean algebra.' The correct translation is: 'In recent times Boolean algebra has been successfully employed in the analysis of relay networks of the series-parallel type.' "

Lexical translation would help a person to get a rough idea of the content, but a better translation would be needed if he thought it worthwhile.

*Syntactic and semantic
methods are needed*

Syntactic translation is based on the devising of rules which can be recorded in the memory of the computer along with the "dictionary."

The Georgetown University Institute of Languages and Linguistics has experimented with the method of attaching tags or signs to normal words which gave them a more precise meaning. These signs denoted six rules of grammar and meaning, which were found to be basic. Dr. Leon Dostert, in charge of the test, estimates it may take as many as 100 rule-tags to translate scientific and technical literature in general.

Semantic translation requires study of the probability of occurrence of words with more than one meaning or use. "The arrangement of words according to probability, where the probabilities depend on previous words, is known as an ergodic process. Analysis of the theories involved in such processes is so deep and complex that it has taxed the efforts of the best mathematicians. But therein might lie the answer to how semantic accuracy will be achieved in machine translation."

CAN MACHINES TRANSLATE?

ELECTRONICS—BUSINESS EDITION, March 21, 1958; pages 26, 27.

Research teams are working on word-for-word translation techniques.

Information Retrieval

A FIRST APPROACH TO PATENT SEARCHING PROCEDURES ON STANDARDS ELECTRONIC AUTOMATIC COMPUTER (SEAC)

Patent Office Research and Development Report #10

The U.S. Patent Office and the National Bureau of Standards are cooperating in a study of the needs of the Patent Office for mechanizing patent search. A preliminary search program has been written for the SEAC. The program, called HAYSTAQ, is limited to the field of chemistry, and consists of four parts.

HAYSTAQ on the SEAC

1. The Disclosure Data Preparation Routine. "The task of encoding the mass of information making up the file, and of ensuring its accuracy, is truly Herculean. Because the file of encoded information is good only so far as it is accurate, ingenious and very fine-sweeping error detection methods must be devised to eliminate the element of human error."

2. The Question Data Preparation Routine. This routine checks the unedited question data for errors.

3. The Search Routine. This routine is designed to eliminate unprofitable searches, and consists of ordering of data and screening. "A great part of the strength of the HAYSTAQ program lies in its ability to handle diverse relationships among chemical compounds per se and among their structural elements."

4. The Checkout Routine. This routine checks the validity of the answers. "In a search for a mixture of materials, the hit words are analyzed to determine whether the combinatorial relationships among the several items are the ones sought and whether a sufficient number of real answers have been found."

In order to speed up research results, the HAYSTAQ system has been limited to the field of chemistry. "While the general concepts on which this system is based are believed applicable to subject matter in fields other than chemistry, no attempt has as yet been made to apply the system to searches in other fields, such as the mechanical or electrical fields. The system permits many varied types of questions, some of which present numbers of complex variations. Limitations have been imposed upon some of these because of the impracticability of exploring all of the possibilities at the present time."

For further information write to: Office of Research and Development, U.S. Patent Office, Washington, D. C.

Equipment

AUTOMATION GETS IT WHOLESALE

BUSINESS WEEK, March 15, 1958; pages 157-160.

Brunswick Drug Company of Los Angeles has an automatic order filling system for handling 1800 items which account for 50% of its warehouse traffic. Punched cards are tab-filed for each of the items, and for the retail stores. The appropriate cards are selected from the files according to the preliminary invoice typed when an order is phoned in. The invoice and cards are sent to the tab room where a final invoice is printed, and item cards are separated into machine-picked or hand-picked items. The machine-picked item cards are then processed to select a conveyor and activate the merchandise bays. The control bridge operator checks off the items as they are dispensed, and the order is conveyed to the packing station, along with its routing tag.

CATALOGING THE ELECTRONIC COMPUTERS

OFFICE EQUIPMENT NEWS, March 1958, pages 59, 60.

Twenty-six computers, classified into medium, small, and large, are cataloged, with information on monthly rental, number installed and first delivery date, storage size, input and output media, input-output speed and internal speed.

MORE PROCESSING OF DATA BY CENTRAL COMPUTER

ELECTRONIC WEEK, March 31, 1958; pages 7, 8.

AMA CONFERENCE HEARS "PROGRESS REPORTS" ON EDP INSTALLATIONS

OFFICE MANAGEMENT, April, 1958; pages 25-27, 70-78.

News reports are given on the Fourth Annual Electronics Conference of the American Management Association, held in March. The exhibits of communications equipment pointed up the increased feasibility of central processing of data for far-flung business organizations. Data may be transmitted by wire (telephone or telegraph) in a variety of ways, permitting source documents to remain in the originating office for reference. Brief reviews of some of the sessions are given.

Comment

EDUCATION FOR EDP

One of the problems facing those who are planning EDP systems is the education and training of personnel. Opinions differ as to whose responsibility this may be, but the trend appears to be toward the professional educator in university, college, high school, and even grade school. (DPD: April 1958, page 3: "Thinking Ahead: How Near is the Automatic Office?")

Presently, three patterns of education are appearing:

*Courses are a result of
computer gift, or
cooperation with business
and professional groups*

1. A university or college establishes one or two "feeler" courses in electronic data processing or operations research. These may be in the regular undergraduate curricula, but more likely are graduate courses, or single-shot courses in the extension division. Sometimes the impetus for establishing a course has been the acquisition of a computer, either purchased, or given to the institution by a computer manufacturer. Examples of gifts are the IBM 709 about to be installed at UCLA's Western Data Processing Center, the NCR 102 (now out of production) given to the University of Southern California for research studies in psychological testing, and the Univac presented to the University of Pennsylvania by Remington Rand. Most of the manufacturers make attractive price quotations to universities. The pioneer was IBM which now has more than 40 of its 650's in university installations. ElectroData has a program of time-sharing on equipment it installs in educational institutions.

2. A business organization (usually a computer manufacturer) assists a college in establishing courses in EDP. Remington Rand, for example, offers tuition-free training for faculty members, and text materials for university students, as well as assistance in preparation of curricula. (DPD, June 1957, page 15.) Other assistance is provided colleges through industrial research contracts, or the underwriting of computing centers. The National Science Foundation has a plan for helping educational institutions set up computing centers, mostly for scientific work.

3. A professional organization sponsors, or helps set up a course on undergraduate or extension basis, usually slanted toward the interest of the organization. Examples are the educational programs of the National Machine Accountants Association on the chapter level in Orange County, California, and in New Jersey. (DPD: January 1958, page 15, and February 1958, page 23.) The Los Angeles chapter of the Association for Computing Machinery is cooperating with local colleges by instructing college professors, and helping to set up courses in electronic data processing. There are undoubtedly many excellent local cooperative plans like these.

No one knows the requirements for EDP jobs

A serious handicap in designing courses for the education and training of programmers, systems designers, and technicians is the lack of a clear picture of the requirements of these professions. Recently the Systems and Procedures Association wrestled with this problem in their profession, and were unable even to define the scope and boundaries of a systems person. (DPD: December 1957, page 14.)

This confusion is reflected in the hit-or-miss fashion in which EDP or computing courses are set up in universities. There is no clear pattern. Some courses in programming and operations research are found, labelled as such, but scattered among Mathematics, Chemistry, Business Administration, and Engineering Departments. In some cases, students taking Business Administration or Advertising courses brush against electronic computing techniques in such classes as marketing, accounting, or statistical research.

Another handicap in designing courses for training EDP personnel is the divergence of opinions as to what kind of training is a prerequisite. Some say the discipline of science and mathematics is necessary. Others believe a liberal arts or philosophical background is best.

Are there implications for redesign of high school and junior college curricula?

Recently published research conclusions¹ suggest that businessmen want first of all, persons who think logically, who are trained in good systems principles, statistics, and mathematics, and who have an understanding of business as a whole. This implies the need for serious study of undergraduate and introductory curricula by the universities, and a definition of the qualities needed in EDP and systems personnel by industry. Furthermore, such defining may indicate voids in the education of entering freshmen and juniors which will require a reevaluation of high school and junior college curricula and teaching methods.

Next month we will discuss some interesting experiments being made in the teaching of math and EDP concepts below the college level, and some revealing research into the attitudes of high school business educators regarding the teaching of EDP at the high school level.

Reference

1. Gibson, E. Dana, Professor of Business Education, San Diego State College--"Integrated and Electronic Data Processing in Relation to Schools of Business Administration," published by South-Western Publishing Company, 1957.

Training

Operations Research in Production and Inventory Control, sponsored by Case Institute of Technology

Date: June 2-13, 1958

Place: Case Institute, Cleveland, Ohio

Information: R. L. Bell, Engineering Administration Department,
Case Institute of Technology, 10900 Euclid Avenue,
Cleveland, Ohio

Summer Engineering Seminars, sponsored by The Pennsylvania State University

Introduction to Computer Programming, June 16 to 21

Automatic Data Processing in Business and Industry, June 23 to 28

Scientific and Engineering Computation, July 13 to 25

Mathematical Methods for Management, August 3 to 8

For information, write: Extension Conference Center, The Pennsylvania State
University, University Park, Pennsylvania

Computer and Management Science Program, University of Michigan

Summer Session, 1958. Courses on computer engineering, operations research, management sciences, and business data processing are included. Session begins June 16, 1958. For information, write to: Coordinator of Engineering Summer Conferences, 2038 East Engineering Building, Ann Arbor, Michigan.

Industrial Engineering Seminars, Cornell University

June 17-20, 1958. Seven seminar groups: Industrial Management, Manufacturing Engineering, Small Plant Management, Methods and Work Measurement, Data Processing Systems, Applied Industrial and Engineering Statistics, Statistical Aspects of Component Reliability.

Work Simplification and Measurement Conference, sponsored by Wharton School (University of Pennsylvania)

Date: June 16-27, 1958

Place: Philadelphia, Pennsylvania (University of Pennsylvania)

Fee: \$375

Information: Dr. Adrian M. McDonough, Director, Wharton Refresher Conference, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia 4, Pa.

Advanced Business Systems Conference and Workshop, sponsored by Wharton School (University of Pennsylvania)

Date: July 7-18, 1958

Place: Philadelphia, Pennsylvania (University of Pennsylvania)

Fee: \$375

Information: Same as above

Electronic Data Processing for Business and Industry (Course 10), sponsored by Canning, Sisson and Associates

Date: July 28 through August 1, 1958

Place: New York (Hotel Biltmore)

Fee: \$250

Program: Emphasis on the applications aspect of electronic data processing, planning for an EDP system

For whom: Management personnel charged with setting up an EDP system

Information: Canning, Sisson and Associates, 1140 South Robertson Blvd., Los Angeles 35, California

Meetings

NOMA Office Show and Conference

Date: May 25-28, 1958

Place: Chicago (Conrad Hilton Hotel)

Information: The National Office Management Association, Willow Grove, Pennsylvania

Short Course on Automation and Computers

Date: June 2-4, 1958

Place: University of Texas, College of Engineering

Fee: \$10 registration fee. Registration limited.

Information: B. H. Armistead, College of Engineering, University of Texas, Austin, Texas

Canadian Conference for Computing and Data Processing, sponsored by University of Toronto

Date: June 9, 10, 1958

Place: Toronto, Canada (University of Toronto)

Program: The present status of the use of EDP systems in Canada

Fee: \$35

Information: Mr. H. W. Rowlands, 15 Wellington Street W., Toronto, Ontario, Canada

International Automation Exposition and Congress

Date: June 9-13, 1958

Place: New York (Coliseum)

Information: Richard Rimbach Associates, Show Management, 845 Ridge Avenue, Pittsburgh 12, Pennsylvania

Association for Computing Machinery Annual Meeting

Date: June 11-13, 1958

Place: Urbana, Illinois (University of Illinois)

"Industrial Engineering--Gateway to Productivity," 9th Annual Conference of the American Institute of Industrial Engineers

Date: June 12-14, 1958

Place: Los Angeles (Hotel Statler)

Program: Fifty sessions on industrial engineering subjects will be held. In addition, during the conference, management game will be played as a demonstration of simulation technique in management-decision-making. An IBM 650 will be used for computing the results during the playing.

Information: Stanley Wolfberg, 1409 Thayer Avenue, Los Angeles 24, California

National Machine Accountants Association 7th Annual Conference

Date: June 18-20, 1958

Place: Atlantic City, New Jersey (Chalfonte Haddon Hall)

Information: Garden State Chapter, N. M. A. A., 259 Clifton Avenue, Newark, New Jersey

National Association of Accountants 39th International Accounting Conference

Date: June 22-25, 1958

Place: Chicago, Illinois (Conrad Hilton Hotel)

Information: National Association of Accountants, 505 Park Avenue, New York 22, New York

5th Annual Symposium on Computers and Data Processing, sponsored by Denver Research Institute

Date: July 24-25, 1958

Place: Denver, Colorado (Albany Hotel)

Information: C. A. Hedberg, Denver Research Institute, University of Denver, Denver 10, Colorado

Technical Meeting on Automatic Decision-making, sponsored by Los Angeles Chapter of A. C. M.

Date: August 21, 1958

Place: University of California at Los Angeles

Instrument Society of America Automation Conference

Date: September 15-19, 1958

Place: Philadelphia, Pennsylvania (Convention Hall)

SHARED PROGRAMING GROUP

SHARE- Sept. 10-12, 1958, San Francisco

References

The addresses of publishers and periodicals mentioned in this issue of DATA PROCESSING DIGEST are listed below for your convenience in obtaining further information about the articles or books listed.

American Documentation
Interscience Publishers, Inc.
250 Fifth Avenue
New York 1, New York

American Management Association
1515 Broadway, Times Square
New York 36, New York

Auditgram
38 South Dearborn Street
Chicago 3, Illinois

Automation Progress
Stratford House
9 Eden Street
London N. W. 1, England

Banking
12 East 36th Street
New York 16, New York

Best's Life News
75 Fulton Street
New York 38, New York

Business Week
330 West 42nd Street
New York 36, New York

Chain Store Age (Admin. Ed.)
2 Park Avenue
New York 16, New York

Computing News
12805 - 64th Avenue South
Seattle 88, Washington

Consulting Engineer
420 Main Street
St. Joseph, Michigan

The Controller
Two Park Avenue
New York 16, New York

Data Processor
IBM Corporation
590 Madison Avenue
New York 22, New York

Electronic Week
830 Third Avenue
New York 22, New York

Electronics
330 West 42nd Street
New York 36, New York

Journal of Industrial Engineering
145 North High Street
Columbus 15, Ohio

Journal of Machine Accounting
208 South Main Street
Paris, Illinois

O. & M. Bulletin
Treasury Chambers
Great George Street
London S. W. 1, England

Office Equipment News
146 Bates Road
Montreal 8, Canada

Office Executive
Willow Grove, Pennsylvania

Office Management
212 Fifth Avenue
New York 10, New York

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey

Product Engineering
330 West 42nd Street
New York 36, New York

The Spectator
Chestnut and 56th Streets
Philadelphia 39, Pennsylvania

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